


# National Technical Systems Test Report for Electromagnetic Interference (EMI) Testing of the Verify Controller with 2 Touch Writer Duos

**Prepared For**

SLI Compliance | 4720 Independence Street | Wheat Ridge, CO 80033


**Performed By**

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Technical Writer



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**Revision History**

<b>Rev.</b>	<b>Description</b>	<b>Issue Date</b>
0	Initial Release	05/04/2022

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**1.0 Introduction**

This document presents the test procedures used and the results obtained during the performance of an Electromagnetic Interference (EMI) test program. The test program was conducted to assess the ability of the specified Equipment Under Test (EUT) to successfully satisfy the requirements listed in Section 2.0.

**2.0 References**

The following references listed below form a part of this document to the extent specified herein.

- Test Specification: FCC Part 15 Class B
- SLI Compliance Purchase Order(s) 20220207-01, dated 02/07/2022
- National Technical Systems (NTS) Quote(s) OP0607041, dated 02/02/2022
- ISO/IEC 17025:2017(E) *General Requirements for the Competence of Testing and Calibration Laboratories*, dated 11/1/2017

**3.0 Product Selection and Description**

SLI Compliance selected and provided the test sample(s) to be used as the Equipment Under Test. Details below:

**Table 3.0-1: Product Identification - Equipment Under Test (EUT)**

Item	Qty.	Name/Description	Part Number	Serial Number
1	1	Verify Controller	3006085	C2115161506
2	2	Touch Writer Duos	3006070	B1903101010
3				B2013730601

**3.1 Security Classification**

Non-classified

**4.0 General Test Requirements**

**4.1 Test Equipment**

The instrumentation used in the performance of these tests is periodically calibrated and standardized within manufacturer's rated accuracies and are traceable to the National Institute of Standards and Technology. The calibration procedures and practices are in accordance with ANSI/NCSL Z540-1 and ISO 17025:2017. Certification of calibration is on file subject to inspection by authorized personnel.

**4.2 Measurement Uncertainties**

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below were calculated using the approach described in CISPR 16-4-2:2003 using a coverage factor of k=2, which gives a level of confidence of approximately 95%. The levels were found to be below levels of CISPR and therefore no adjustment of the data for measurement uncertainty is required.

**Table 4.2-1: Measurement Uncertainties**

Measurement Type	Measurement Unit	Frequency Range
Conducted Emissions	dBuV or dBuA	150 kHz – 30 MHz
Radiated Electric Field	dBuV/m	30-1,000 MHz
		1,000-6,000 MHz

**5.0 Test Descriptions and Results****Table 5.0-1: Summary of Test Information & Results**

<b>Section</b>	<b>Test</b>	<b>Specification</b>	<b>Test Facility</b>	<b>Test Date</b>	<b>Part #</b>	<b>Serial #</b>	<b>Test Result</b>
5.1	Radiated Emissions	FCC Part 15 Class B	Longmont	04/13/2022 - 04/25/2022	3006085 3006070	C2115161506 B1903101010 B2013730601	Conforms
5.2	Conducted Emissions	FCC Part 15 Class B	Longmont	04/13/2022 - 04/25/2022	3006085 3006070	C2115161506 B1903101010 B2013730601	Conforms

**5.1 Radiated Emissions**

**5.1.1 Test Procedure**

FCC Part 15 Class B

**5.1.2 Test Result**

The Verity Controller with 2 Touch Duo Writers met the specification requirements for Radiated Emissions.

**5.1.3 Test Datasheets**

**Radiated Emissions, FCC Part 15 (VVSGL1.0 IEC 61000)**

Manufacturer:	<u>SLI Compliance</u>	Project Number:	<u>PR154302</u>
Customer Representative:	<u>Derrick Foerster</u>	Test Area:	<u>10M#2</u>
Model:	<u>Verity Controller 3006085</u> <u>Touch Writer Duo 3006070</u>	S/N:	<u>C2115161506</u> <u>B1903101010</u> <u>B2013730601</u>
Standard Referenced:	<u>FCC Part 15 (VVSGL1.0 IEC 61000) Class B</u>	Date:	<u>March 18, 2022</u>
Temperature:	<u>22°C</u>	Humidity:	<u>17%</u>
Input Voltage:	<u>120Vac/60Hz</u>	Pressure:	<u>837 mb</u>
Configuration of Unit:	<u>Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.</u>		
Test Engineer:	<u>Mike Tidquist</u>		

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<b>Radiated Emissions-Quasi-Peak Data Table 30MHz – 1GHz</b>					
<b>Vertical</b>					
<b>Frequency (MHz)</b>	<b>Amplitude (dBµV/m)</b>	<b>Quasi-peak Limit (dBµV/m)</b>	<b>Delta to Limit (dB)</b>	<b>EUT Azimuth (degrees)</b>	<b>Antenna Height (cm)</b>
54.79	16.7	30	-13.3	65	289
112.09	21.4	30	-8.6	145	108
113.65	24	30	-6	174	182
115.13	22.9	30	-7.1	175	164
150.83	26	30	-4	18	111
153.58	25.8	30	-4.2	19	99
157.56	26.5	30	-3.5	254	101
833.26	23.4	37	-13.6	133	326

Radiated Emissions- Peak and Average Data Table 1GHz – 10GHz					
Vertical					
Frequency (MHz)	Amplitude (dBµV/m)	Peak Limit (dBµV/m)	Delta to Pk Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
1006	41.3	73	-31.7	54	225
1108	39.6	73	-33.4	54	135
1200	43.6	73	-29.4	54	0
1250	42.9	73	-30.1	54	202
1750	47.5	73	-25.5	54	157
1810	47.2	73	-25.8	54	157
1870	47.7	73	-25.3	54	135
2000	46	73	-27	54	112
9592	51	73	-22	54	135
Frequency (MHz)	Amplitude (dBµV/m)	Average Limit (dBµV/m)	Delta to Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
1006	21.2	54	-32.8	234	301
1108	23.1	54	-30.9	115	205
1200	22	54	-32	21	170
1250	22.3	54	-31.7	230	106
1750	27.1	54	-26.9	147	105
1810	27.2	54	-26.8	137	302
1870	25.4	54	-28.6	153	131
2000	38.7	54	-15.3	121	170
9592	37.3	54	-16.7	105	329

**Radiated Emissions, FCC Part 15 (VVSG1.0 IEC 61000)**

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #2
Model:	Verity Controller 3006085 Touch Writer Duo 3006070	S/N:	C2115161506 B1903101010 B2013730601
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 18, 2022
Temperature:	22°C	Humidity:	17%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Radiated Emissions-Quasi-Peak Data Table 30MHz - 1GHz  
Horizontal**

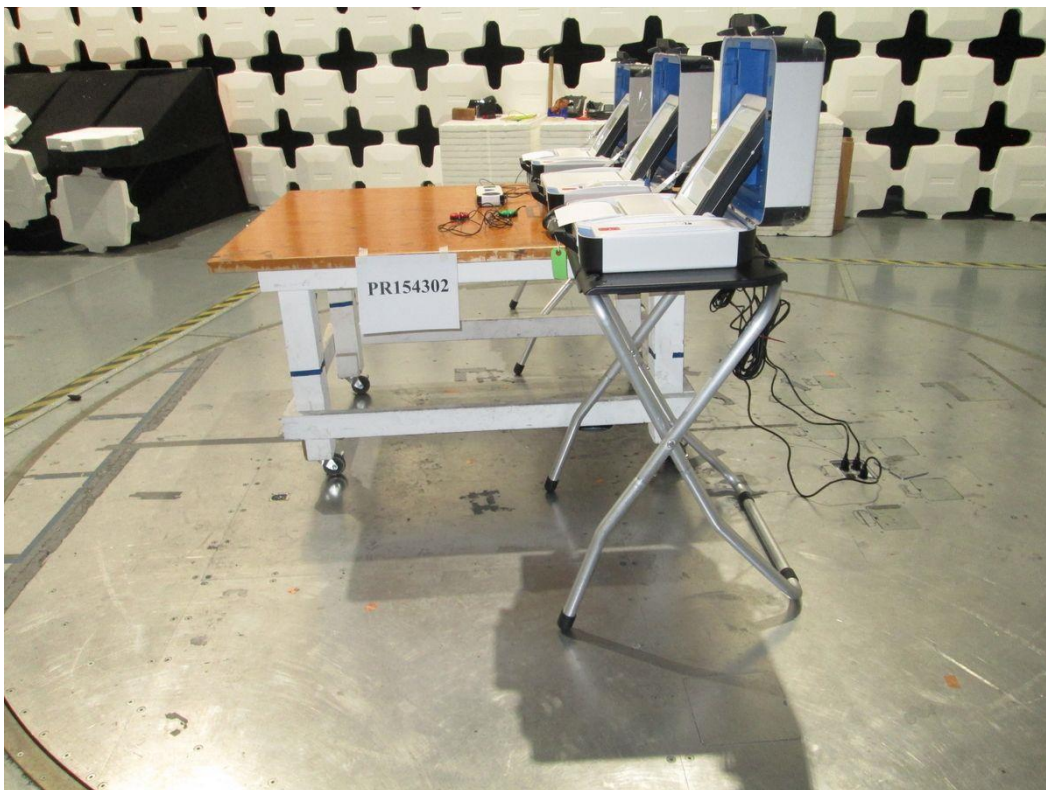
Frequency (MHz)	Amplitude (dBμV/m)	Quasi-peak Limit (dBμV/m)	Delta to Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
101.33	17.8	30	-12.2	250	111
150.79	22.4	30	-7.6	104	311
153.45	22.9	30	-7.1	274	353
233.57	21.2	37	-15.8	29	398
384.02	24	37	-13	1	193
833.32	23.4	37	-13.6	113	102
841.69	23.1	37	-13.9	100	220
856.57	23.3	37	-13.7	118	250

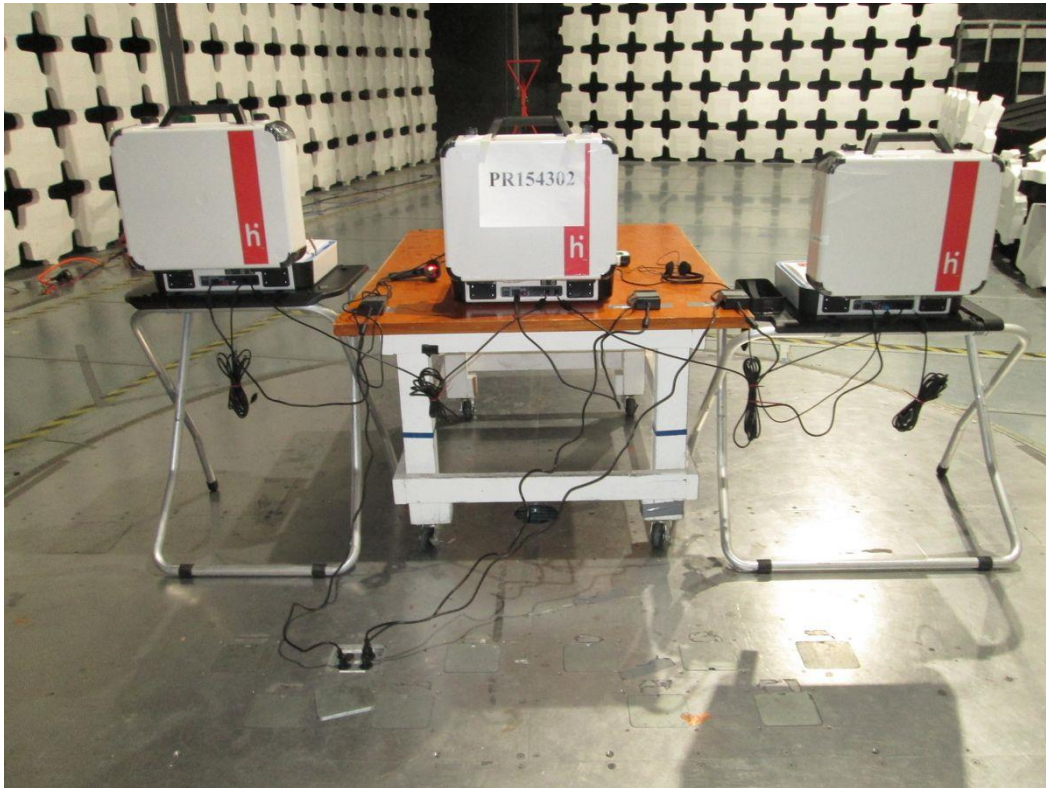


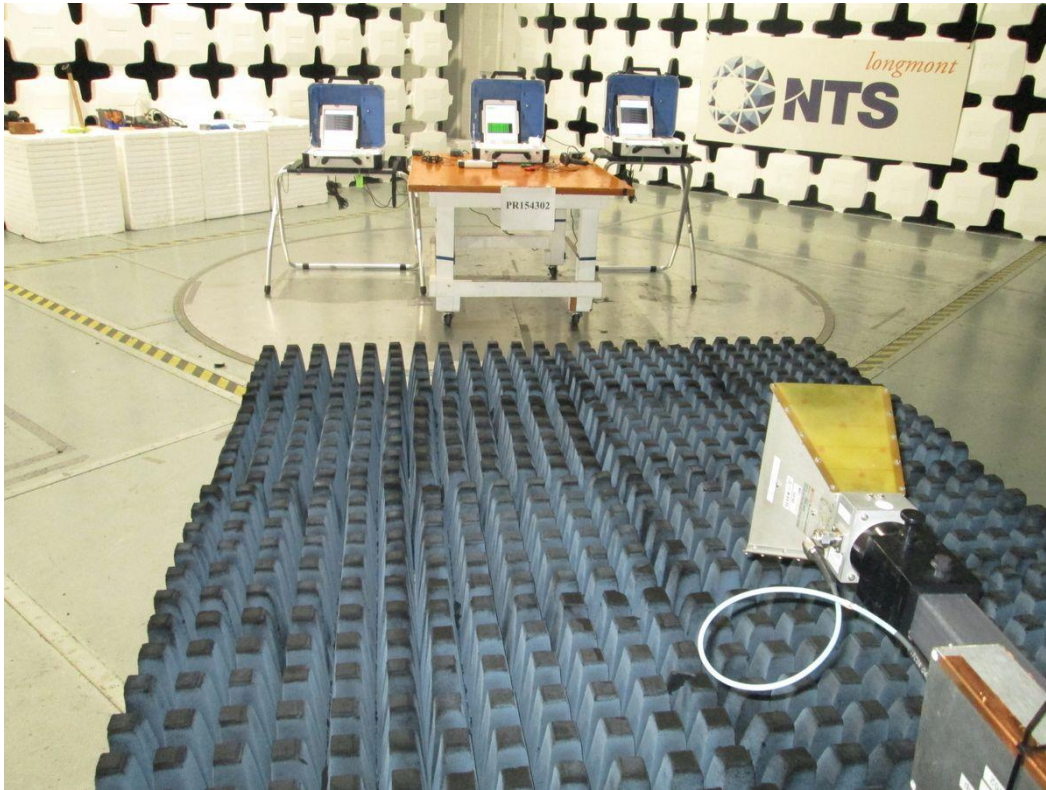
Radiated Emissions- Peak and Average Data Table 1GHz – 10GHz					
Horizontal					
Frequency (MHz)	Amplitude (dBµV/m)	Peak Limit (dBµV/m)	Delta to Pk Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
1038	24.2	54	-29.8	143	101
1104	22.9	54	-31.1	127	110
1200	21.7	54	-32.3	360	132
1334	31.5	54	-22.5	93	322
1500	22.5	54	-31.5	183	114
1660	22.8	54	-31.2	105	170
1750	24.7	54	-29.3	213	131
1898	26	54	-28	93	103
1916	27.1	54	-26.9	131	105
1940	24	54	-30	34	110
2000	34.8	54	-19.2	90	200
9584	37.8	54	-16.2	60	217
Frequency (MHz)	Amplitude (dBµV/m)	Average Limit (dBµV/m)	Delta to Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
1038	39.2	73	-33.8	54	157
1104	39.9	73	-33.1	54	157
1200	39.5	73	-33.5	54	337
1334	43	73	-30	54	90
1500	41.5	73	-31.5	54	202
1660	45	73	-28	54	135
1750	44.5	73	-28.5	54	202
1898	48.1	73	-24.9	54	112
1916	48.2	73	-24.8	54	135
1940	45.5	73	-27.5	54	45
2000	47.5	73	-25.5	54	112
9584	51.3	73	-21.7	54	67

The highest emission measured was at **157.56 MHz**, which was **3.5 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
  - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
  - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
  - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The “field strength” (FS) emissions level is attained by adding the received amplitude measured (RA), Antenna factor (AF), and cable factor (CF) minus the amplifier gain (AG).  $FS = RA + AF + CF - AG$ . Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation:  $49.6 \text{ dBuV} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dBuV/m}$ . **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “Azm/Pol/Hgt” indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)

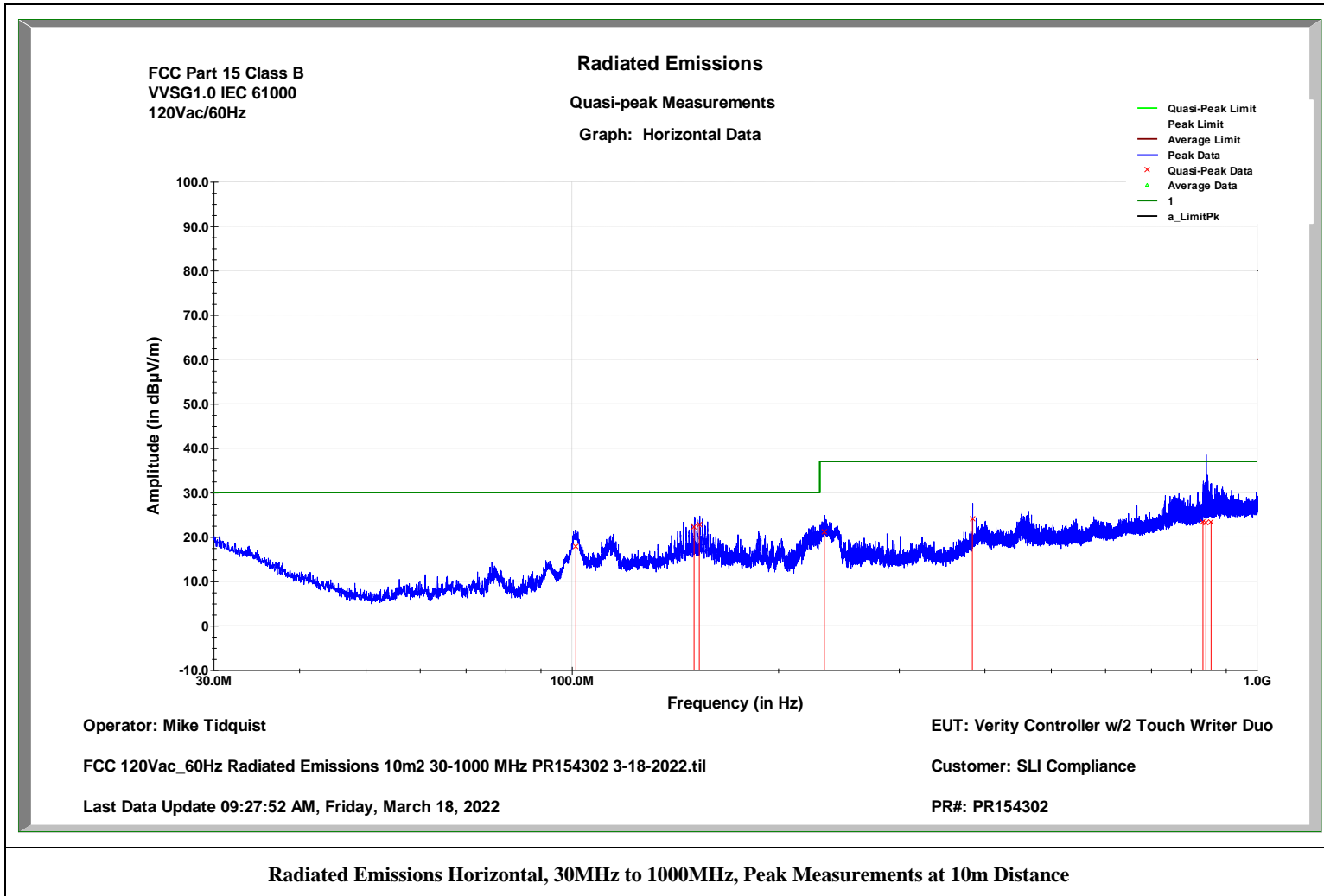
**5.1.4 Test Photographs****RE 001 Front****RE 002 Right**

**RE 003 Back****RE 004 Left**

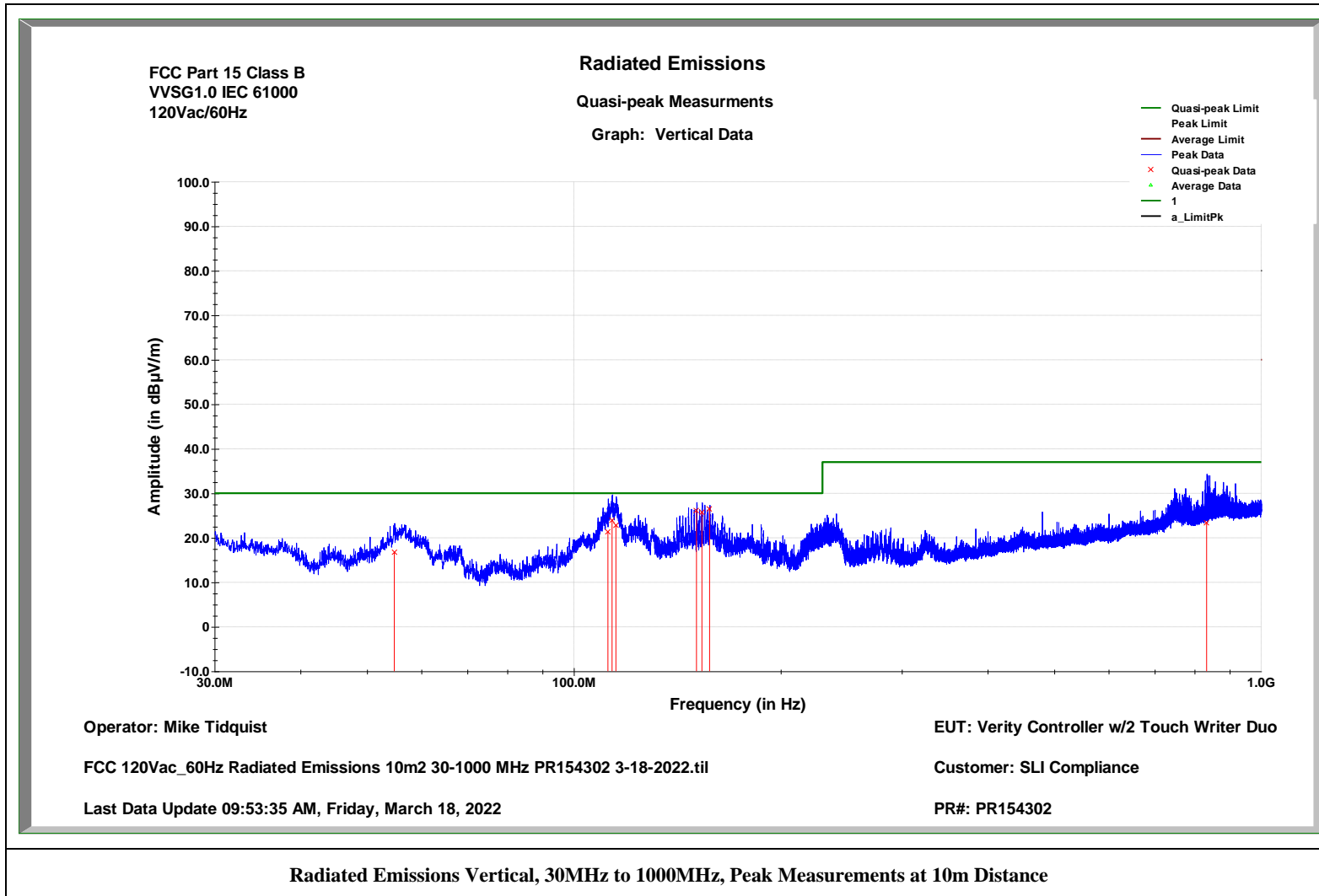


**RE 005 Front @ 3m**

5.1.5 Test Data



Radiated Emissions					
Quasi-peak Measurements					
Table: Horizontal Quasi-peaks below 1 GHz					
Operator: Mike Tidquist EUT: Verity Controller w/2 Touch Writer Duo					
PR#: PR154302					
Customer: SLI Compliance					
Frequency	Amplitude	Quasi-peak Limit	Delta to Limit	EUT Azimuth	Antenna Height
MHz	in dB $\mu$ V/m	in dB $\mu$ V/m	in dB	in degrees	in cm
101.33	17.8	30	-12.2	250	111
150.79	22.4	30	-7.6	104	311
153.45	22.9	30	-7.1	274	353
233.57	21.2	37	-15.8	29	398
384.02	24	37	-13	1	193
833.32	23.4	37	-13.6	113	102
841.69	23.1	37	-13.9	100	220
856.57	23.3	37	-13.7	118	250
FCC Part 15 Class B					
VVSG1.0 IEC 61000					
120Vac/60Hz					



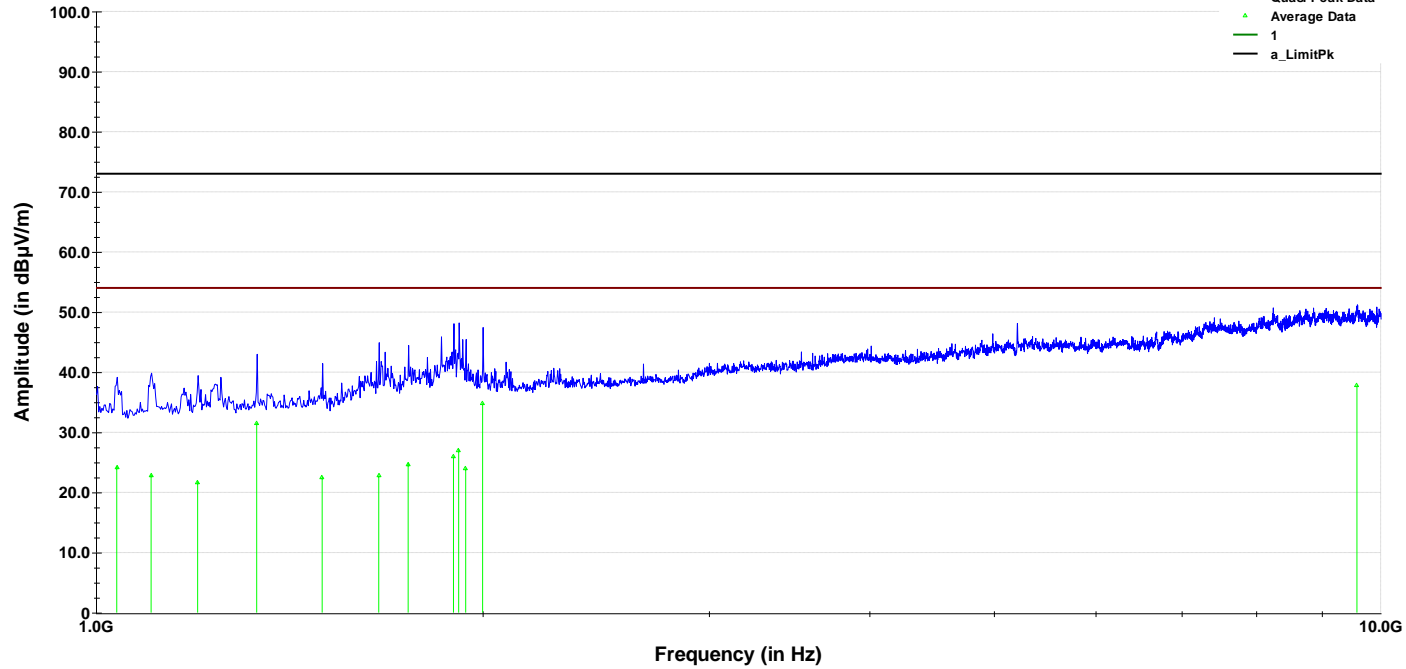
Radiated Emissions						
Quasi-peak Measurements						
Table: Vertical Quasi-peaks below 1 GHz						
Operator: Mike Tidquist EUT: Verity Controller w/2 Touch Writer Duo						
PR#: PR154302						
Customer: SLI Compliance						
Frequency	Amplitude	Quasi-peak Limit	Delta to Limit	EUT Azimuth	Antenna Height	
MHz	in dBμV/m	in dBμV/m	in dB	in degrees	in cm	
54.79	16.7	30	-13.3	65	289	
112.09	21.4	30	-8.6	145	108	
113.65	24	30	-6	174	182	
115.13	22.9	30	-7.1	175	164	
150.83	26	30	-4	18	111	
153.58	25.8	30	-4.2	19	99	
157.56	26.5	30	-3.5	254	101	
833.26	23.4	37	-13.6	133	326	
FCC Part 15 Class B						
VVSG1.0 IEC 61000						
120Vac/60Hz						



Enter Limit:  
 FCC Part 15, Class B  
 (VVSG1.0 IEC 61000)  
 120Vac/60Hz

**Radiated Emissions**  
 Peak, and Average Measurements  
 Graph: Horizontal Data

- Quasi-Peak Limit
- Peak Limit
- Average Limit
- Peak Data
- × Quasi-Peak Data
- △ Average Data
- 1
- a\_LimitPk



Operator: Mike Tidquist

Last Data Update 12:23:04 PM, Friday, March 18, 2022

EUT: Verity Controller, Touch Writer Duo

Customer: SLI Compliance

PR#: PR154302

**Radiated Emissions Horizontal, 1GHz to 10GHz, Peak Measurements at 3m Distance**

**Radiated Emissions**

**Average Measurements**

**Table: Horizontal Averages above 1 GHz**

Operator: Touch Writer Duo

PR#: PR154302

Customer: SLI Compliance

Frequency	Amplitude	Average Limit	Delta to Limit	EUT Azimuth	Antenna Height
MHz	in dB $\mu$ V/m	in dB $\mu$ V/m	in dB	in degrees	in cm
1038	24.2	54	-29.8	143	101
1104	22.9	54	-31.1	127	110
1200	21.7	54	-32.3	360	132
1334	31.5	54	-22.5	93	322
1500	22.5	54	-31.5	183	114
1660	22.8	54	-31.2	105	170
1750	24.7	54	-29.3	213	131
1898	26	54	-28	93	103
1916	27.1	54	-26.9	131	105
1940	24	54	-30	34	110
2000	34.8	54	-19.2	90	200
9584	37.8	54	-16.2	60	217

Enter Limit:

FCC Part 1 Class B

(VSG1.0 IEC 61000)



**Radiated Emissions**

**Average Measurements**

**Table: Horizontal Averages above 1 GHz**

Operator: Touch Writer Duo

PR#: PR154302

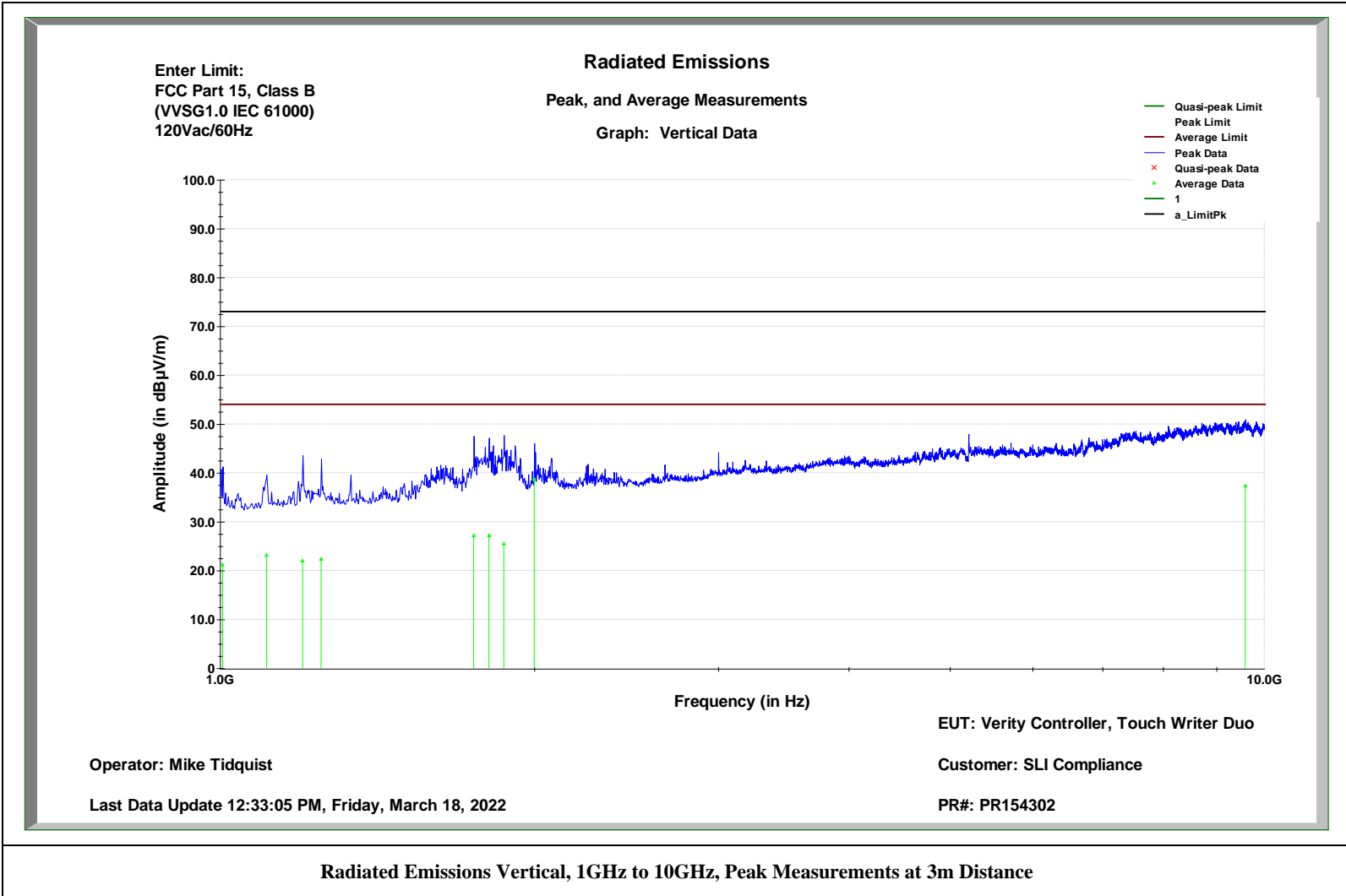
Customer: SLI Compliance

Frequency	Amplitude	Average Limit	Delta to Limit	EUT Azimuth	Antenna Height
MHz	in dBμV/m	in dBμV/m	in dB	in degrees	in cm
1038	24.2	54	-29.8	143	101
1104	22.9	54	-31.1	127	110
1200	21.7	54	-32.3	360	132
1334	31.5	54	-22.5	93	322
1500	22.5	54	-31.5	183	114
1660	22.8	54	-31.2	105	170
1750	24.7	54	-29.3	213	131
1898	26	54	-28	93	103
1916	27.1	54	-26.9	131	105
1940	24	54	-30	34	110
2000	34.8	54	-19.2	90	200
9584	37.8	54	-16.2	60	217

Enter Limit:

FCC Part 1 Class B

(VSG1.0 IEC 61000)





Radiated Emissions						
Average Measurements						
Table: Vertical Averages above 1 GHz						
Operator: Touch Writer Duo						
PR#: PR154302						
Customer: SLI Compliance						
Frequency	Amplitude	Average Limit	Delta to Ave Limit	EUT Azimuth	Antenna Height	
MHz	in dBμV/m	in dBμV/m	in dB	in degrees	in cm	
1006	21.2	54	-32.8	234	301	
1108	23.1	54	-30.9	115	205	
1200	22	54	-32	21	170	
1250	22.3	54	-31.7	230	106	
1750	27.1	54	-26.9	147	105	
1810	27.2	54	-26.8	137	302	
1870	25.4	54	-28.6	153	131	
2000	38.7	54	-15.3	121	170	
9592	37.3	54	-16.7	105	329	
Enter Limit:						
FCC Part 1 Class B						
(VSG1.0 IEC 61000)						



Radiated Emissions						
Peak Data						
Table: Vertical Peak Data above 1 GHz						
Operator: Touch Writer Duo						
PR#: PR154302						
Customer: SLI Compliance						
Frequency	Amplitude	Peak Limit	Delta to Pk Limit	Average Limit	EUT Azimuth	Antenna Height
MHz	in dBμV/m	in dBμV/m	in dB	in dBμV/m	in degrees	in cm
1006	41.3	73	-31.7	54	225	300
1108	39.6	73	-33.4	54	135	201
1200	43.6	73	-29.4	54	0	201
1250	42.9	73	-30.1	54	202	101
1750	47.5	73	-25.5	54	157	101
1810	47.2	73	-25.8	54	157	300
1870	47.7	73	-25.3	54	135	101
2000	46	73	-27	54	112	200
9592	51	73	-22	54	135	300
Enter Limit:						
FCC Part 1 Class B						
(VVS1.0 IEC 61000)						



5.1.6 Test Equipment List

Table 5.1-1: Radiated Emissions Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC059421	Chamber (EMI, Anechoic)OTA	CIR Enterprises	CH 2	04/26/2022	04/26/2024
WC059736	Chamber (EMI, Semi-Anechoic)	CIR Enterprises	CH 1	04/03/2022	04/03/2024
WC059425	Power Supply (AC)	Pacific Power Source	3060-MS/M93235	NCR	NCR
WC059431	Controller (System)	Sunol Sciences	SC110V	NCR	NCR
WC059439	Meter (Digital Multimeter)	Fluke	85	07/30/2021	07/30/2022
WC059550	Amplifier (Pre/RF/Low Noise)	Ciao Wireless	CA118-3010	12/08/2021	12/08/2022
WC059551	Amplifier (Pre/RF/Low Noise)	EMC Integrity	EMCI-LNA-30-1000M	12/06/2021	12/06/2022
WC059739	Antenna (Biconilog)	Sunol Sciences	JB1	05/18/2021	05/18/2023
WC059742	Antenna (Double Ridge Guide)	EMCO	3115	09/22/2021	02/03/2024
WC076859	Receiver	Rohde & Schwarz	ESW44	02/15/2022	02/15/2023
WC078470	Software	ETS-Lindgren	C47213	NCR	NCR
WC078486	Meter (Hydrometer)	Extech Instruments	Datalogger 42270	06/14/2021	06/14/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required

## 5.2 Conducted Emissions

### 5.2.1 Test Procedure

FCC Part 15 Class B

### 5.2.2 Test Result

The Verity Controller with 2 Touch Duo Writers met the specification requirements for Conducted Emissions.

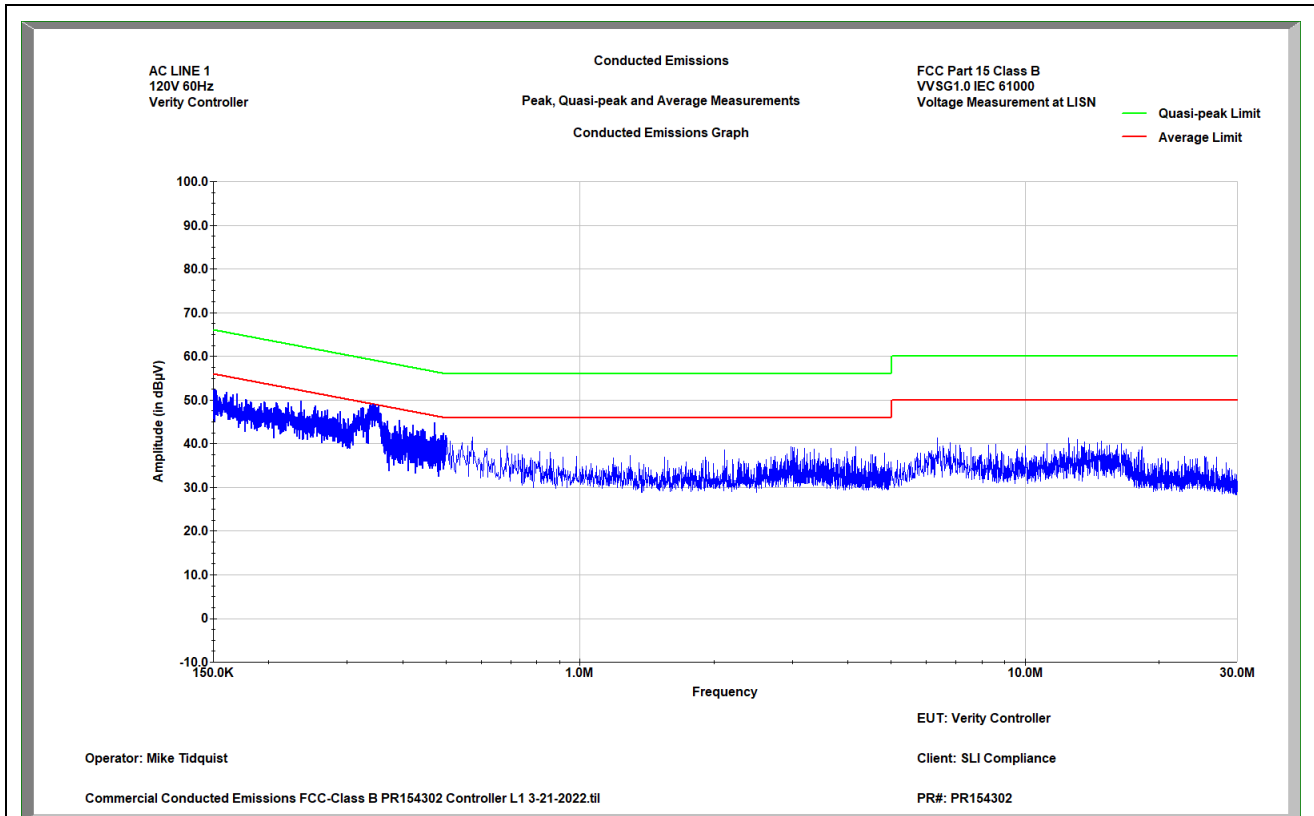
### 5.2.3 Test Data

## Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Verity Controller 3006085	S/N:	C2115161506
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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Conducted Emissions Graph (Line 1)





**Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)**

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Verity Controller 3006085	S/N:	C2115161506
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Quasi-Peak Table (Line 1)**

Frequency MHz	Amplitude dBμV	Quasi-peak Limit dBμV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.22	41.35	63.86	-22.5	53.86	-12.5
0.32	42.23	61.07	-18.85	51.07	-8.85
0.35	44.58	60.39	-15.81	50.39	-5.81
0.35	43.96	60.29	-16.33	50.29	-6.33
0.45	33.8	57.45	-23.65	47.45	-13.65
3.01	31.86	56	-24.14	46	-14.14
6.51	34.26	60	-25.74	50	-15.74
12.49	33.26	60	-26.74	50	-16.74

**Conducted Emissions Average Data Table (Line 1)**

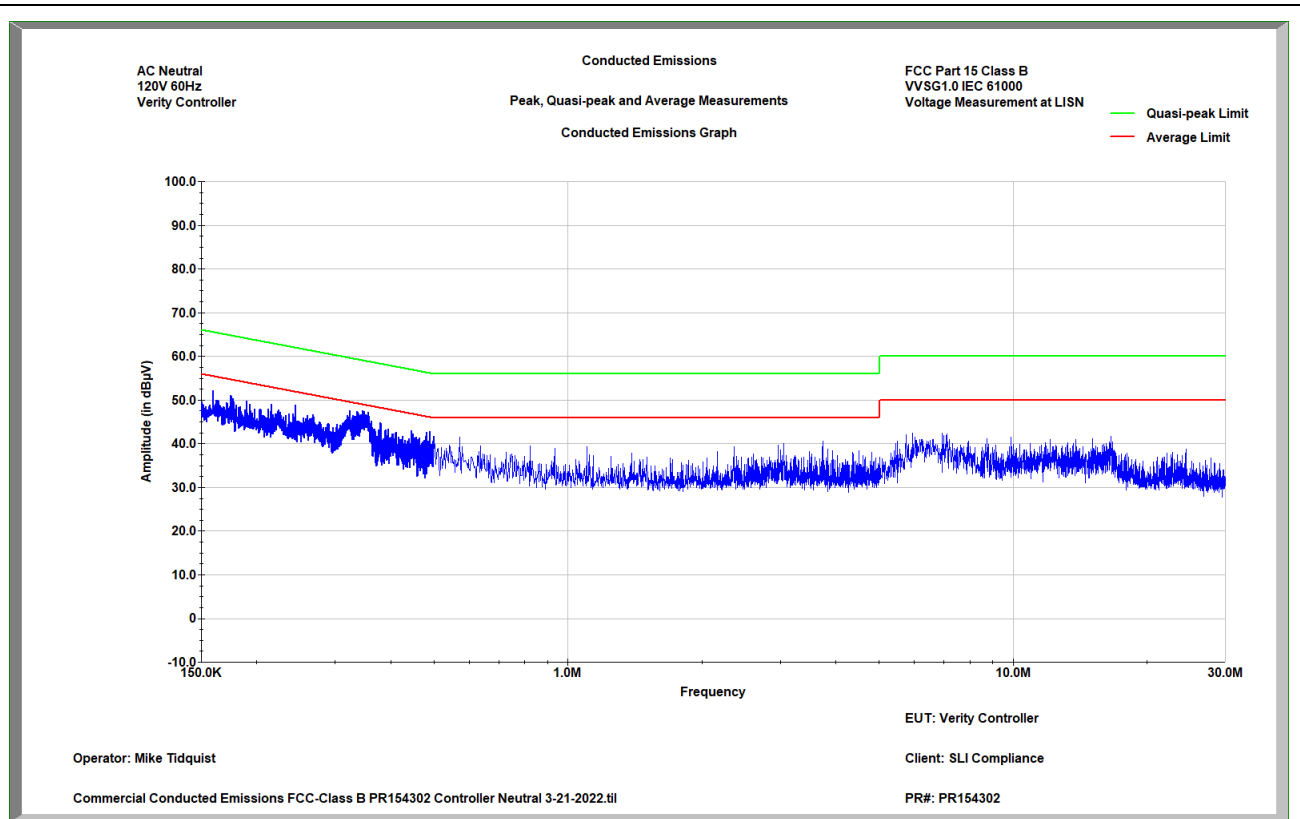
Frequency MHz	Amplitude dBμV	Quasi-peak Limit dBμV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.23	33.18	63.78	-30.6	53.78	-20.6
0.33	33.4	60.95	-27.55	50.95	-17.55
0.35	37.92	60.36	-22.44	50.36	-12.44
0.35	38.44	60.2	-21.76	50.2	-11.76
0.48	25	56.56	-31.56	46.56	-21.56
3.04	24.84	56	-31.16	46	-21.16
6.62	28.09	60	-31.91	50	-21.91
12.26	27.79	60	-32.21	50	-22.21

### Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Verity Controller 3006085	S/N:	C2115161506
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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Conducted Emissions Graph (Neutral)

**Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)**

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Verity Controller 3006085	S/N:	C2115161506
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Quasi-Peak (Neutral)**

Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.16	41.51	65.68	-24.17	55.68	-14.17
0.17	40.38	65.42	-25.04	55.42	-15.04
0.35	41.78	60.21	-18.44	50.21	-8.44
0.35	41.8	60.21	-18.41	50.21	-8.41
0.49	32.32	56.21	-23.89	46.21	-13.89
3.7	29.8	56	-26.2	46	-16.2
6.24	36.86	60	-23.14	50	-13.14
16.32	34.65	60	-25.35	50	-15.35

**Conducted Emissions Average Data Table (Neutral)**

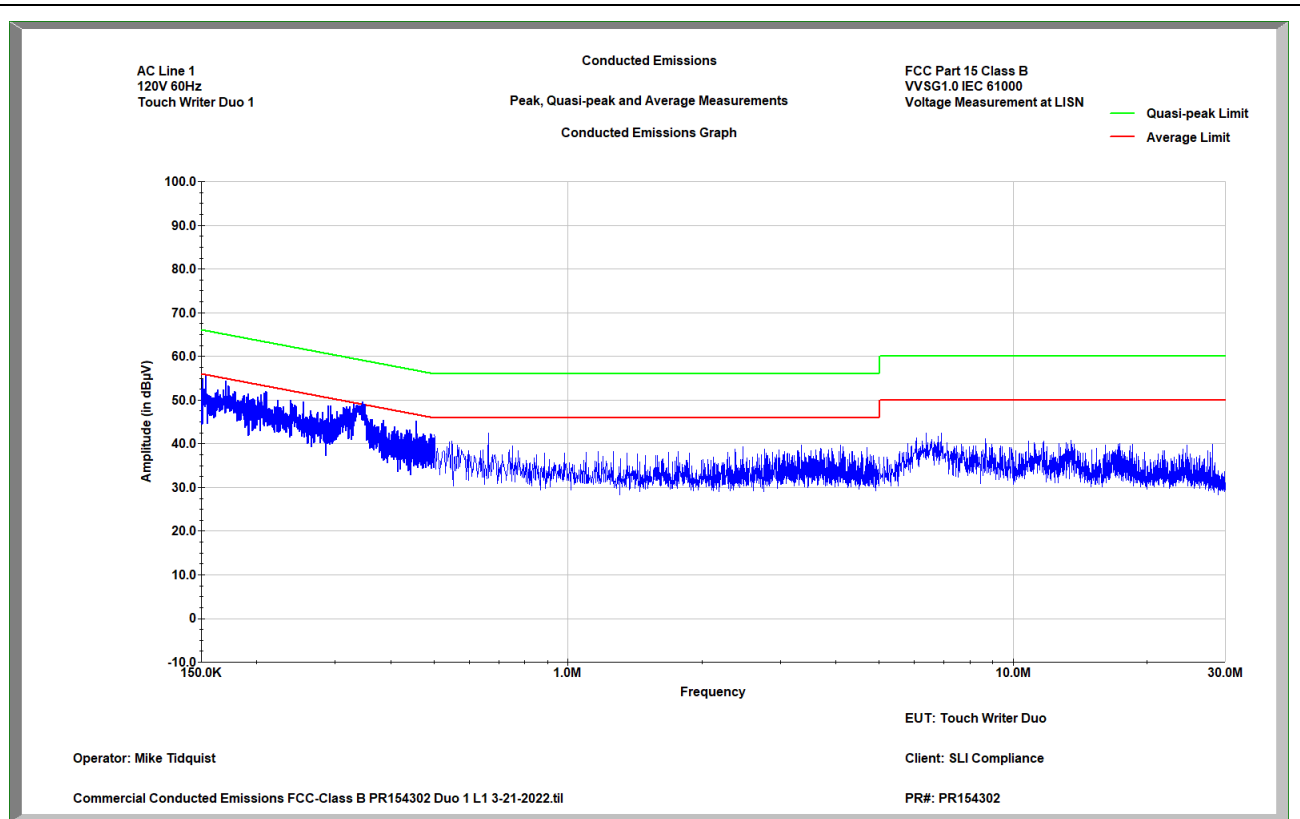
Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.16	33.64	65.62	-31.98	55.62	-21.98
0.17	31.09	65.42	-34.33	55.42	-24.33
0.35	32.9	60.39	-27.49	50.39	-17.49
0.35	34.15	60.26	-26.11	50.26	-16.11
0.48	22.71	56.63	-33.91	46.63	-23.91
3.73	24.24	56	-31.76	46	-21.76
6.2	30.89	60	-29.11	50	-19.11
16.11	28.85	60	-31.15	50	-21.15

### Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B1903101010
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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Conducted Emissions Graph (Line 1)



**Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)**

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B1903101010
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Quasi-Peak Table (Line 1)**

Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.15	47.55	65.99	-18.43	55.99	-8.43
0.17	46.72	65.43	-18.7	55.43	-8.7
0.33	44.82	60.75	-15.93	50.75	-5.93
0.34	45.76	60.63	-14.87	50.63	-4.87
0.47	33.67	56.79	-23.12	46.79	-13.12
0.67	28.89	56	-27.11	46	-17.11
6.49	36.77	60	-23.23	50	-13.23
16.81	32.83	60	-27.17	50	-17.17

**Conducted Emissions Average Data Table (Line 1)**

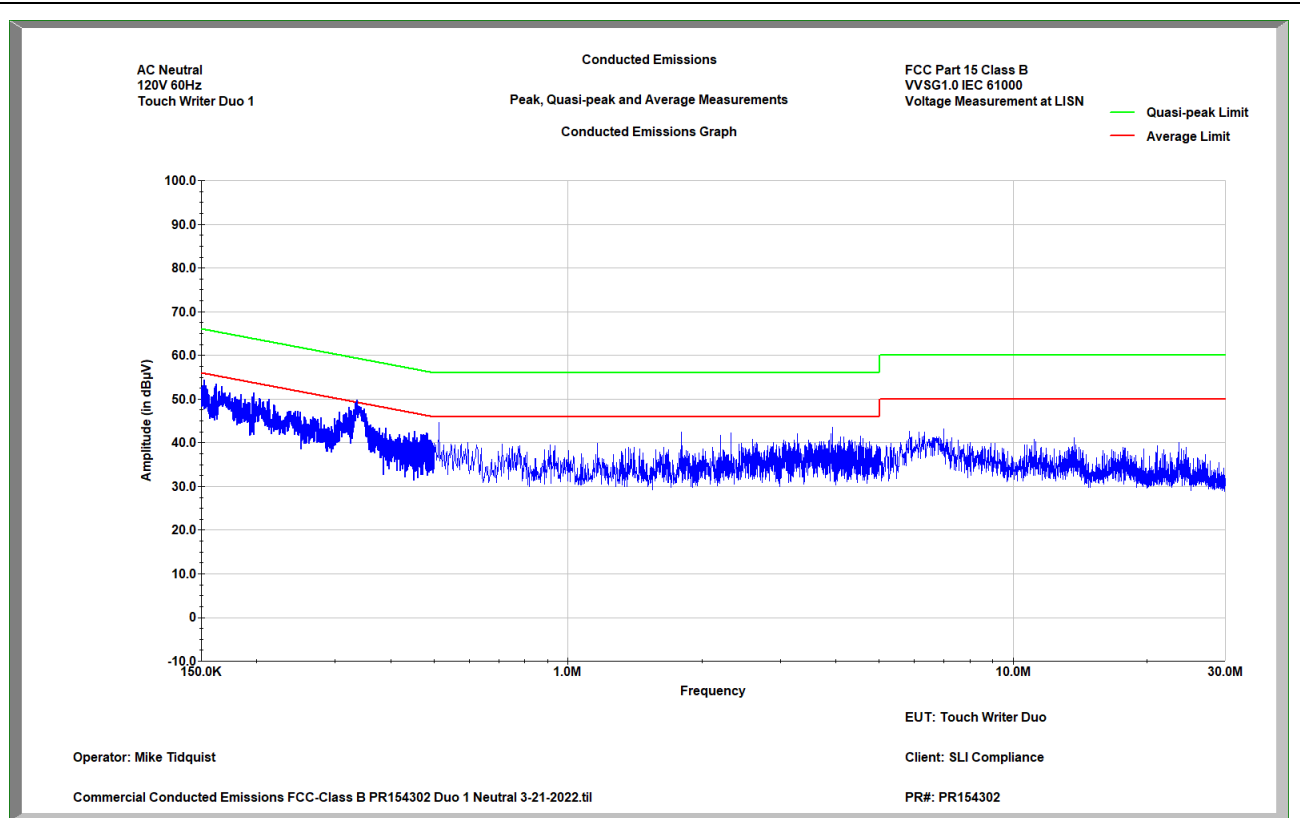
Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.15	34.95	65.97	-31.02	55.97	-21.02
0.17	40.27	65.49	-25.22	55.49	-15.22
0.34	41.06	60.64	-19.58	50.64	-9.58
0.34	41.51	60.6	-19.1	50.6	-9.1
0.46	23.83	57.04	-33.21	47.04	-23.21
0.68	21.64	56	-34.36	46	-24.36
6.44	30.76	60	-29.24	50	-19.24
17.08	26.88	60	-33.12	50	-23.12

### Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B1903101010
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Graph (Neutral)**



**Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)**

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B1903101010
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Quasi-Peak (Neutral)**

Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi-Peak Limit dB	Average Limit	Delta to Average Limit
0.15	47.59	66	-18.4	56	-8.4
0.16	44.96	65.57	-20.61	55.57	-10.61
0.2	43.64	64.48	-20.84	54.48	-10.84
0.34	44.83	60.65	-15.83	50.65	-5.83
0.54	32.15	56	-23.85	46	-13.85
1.81	31.34	56	-24.66	46	-14.66
3.92	34.96	56	-21.04	46	-11.04
6.67	37.58	60	-22.42	50	-12.42

**Conducted Emissions Average Data Table (Neutral)**

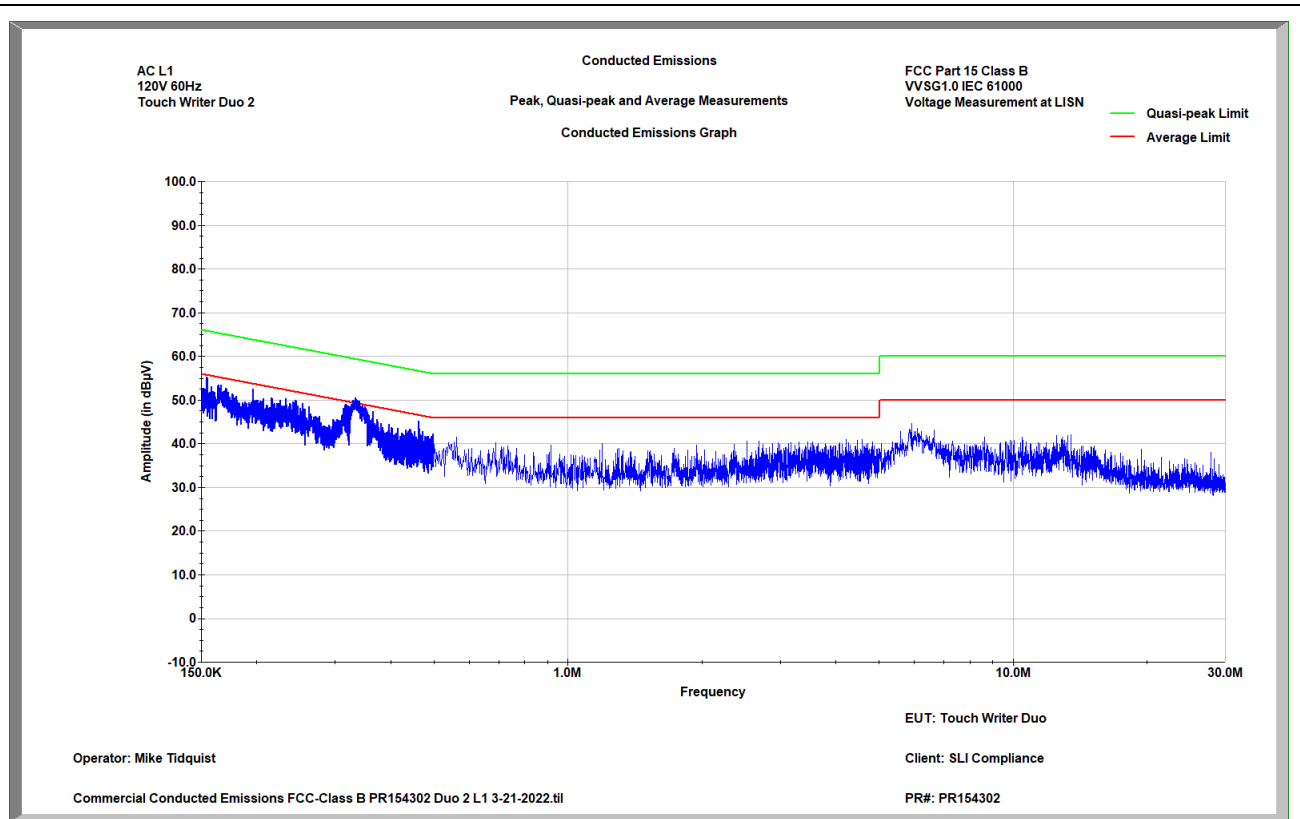
Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi-Peak Limit dB	Average Limit	Delta to Average Limit
0.15	34.22	66	-31.78	56	-21.78
0.16	30.28	65.77	-35.49	55.77	-25.49
0.2	30.18	64.66	-34.48	54.66	-24.48
0.35	33.53	60.3	-26.77	50.3	-16.77
0.5	22.96	56	-33.04	46	-23.04
1.78	23.79	56	-32.21	46	-22.21
3.87	27.25	56	-28.75	46	-18.75
6.77	31.37	60	-28.63	50	-18.63

### Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B2013730601
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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Conducted Emissions Graph (Line 1)





**Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)**

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B2013730601
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Quasi-Peak Table (Line 1)**

Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.15	45.92	65.88	-19.96	55.88	-9.96
0.17	46.77	65.53	-18.75	55.53	-8.75
0.2	43.66	64.58	-20.92	54.58	-10.92
0.33	46.21	60.76	-14.56	50.76	-4.56
0.33	46.2	60.73	-14.53	50.73	-4.53
0.35	43.62	60.37	-16.75	50.37	-6.75
0.46	34	57.01	-23.01	47.01	-13.01
6.05	38.54	60	-21.46	50	-11.46

**Conducted Emissions Average Data Table (Line 1)**

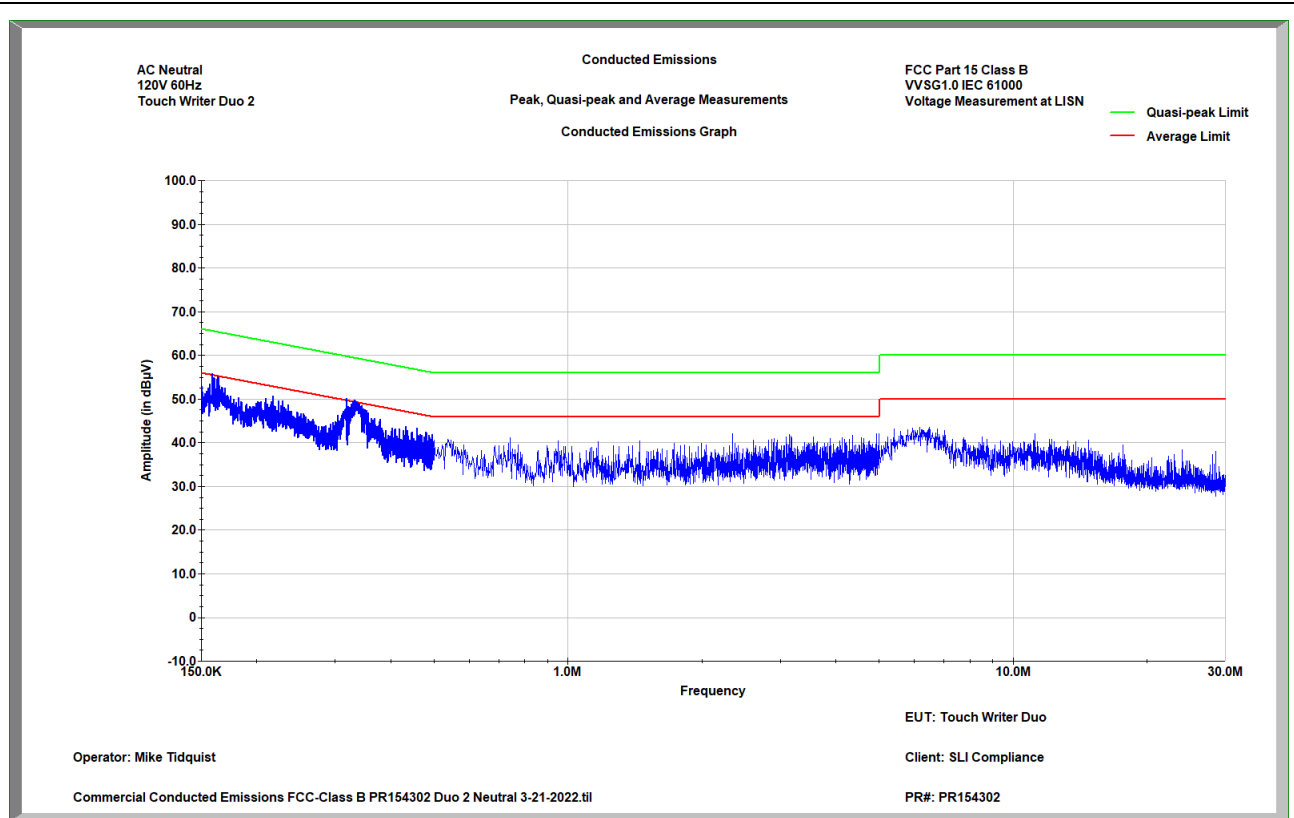
Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi- Peak Limit dB	Average Limit	Delta to Average Limit
0.16	34.8	65.85	-31.05	55.85	-21.05
0.16	36.75	65.69	-28.95	55.69	-18.95
0.19	32.91	64.87	-31.96	54.87	-21.96
0.33	33.6	60.97	-27.37	50.97	-17.37
0.34	39.08	60.69	-21.61	50.69	-11.61
0.35	34.58	60.36	-25.78	50.36	-15.78
0.47	27.23	56.89	-29.67	46.89	-19.67
5.89	31.61	60	-28.39	50	-18.39

### Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B2013730601
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Graph (Neutral)**



**Conducted Emissions, FCC Part 15 (VVSG1.0 IEC 61000)**

Manufacturer:	SLI Compliance	Project Number:	PR154302
Customer Representative:	Derrick Forester	Test Area:	10M #1
Model:	Touch Writer Duo 3006070	S/N:	B2013730601
Standard Referenced:	FCC Part 15 (VVSG1.0 IEC 61000) Class B	Date:	March 21, 2022
Temperature:	22°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	835 mb
Configuration of Unit:	Verity Controller w/2 Touch Writer Duo Fully exercising all features of product.		
Test Engineer:	Mike Tidquist		

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**Conducted Emissions Quasi-Peak (Neutral)**

Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi-Peak Limit dB	Average Limit	Delta to Average Limit
0.17	46.64	65.52	-18.88	55.52	-8.88
0.17	46.35	65.51	-19.17	55.51	-9.17
0.33	45.48	60.81	-15.33	50.81	-5.33
0.33	45.29	60.78	-15.49	50.78	-5.49
0.34	44.86	60.57	-15.72	50.57	-5.72
2.99	34.35	56	-21.65	46	-11.65
6.2	39.23	60	-20.77	50	-10.77
10.89	35.17	60	-24.83	50	-14.83

**Conducted Emissions Average Data Table (Neutral)**

Frequency MHz	Amplitude dBµV	Quasi-peak Limit dBµV	Delta to Quasi-Peak Limit dB	Average Limit	Delta to Average Limit
0.16	34.54	65.72	-31.18	55.72	-21.18
0.16	35.36	65.66	-30.29	55.66	-20.29
0.33	37.5	60.85	-23.35	50.85	-13.35
0.33	38.84	60.76	-21.92	50.76	-11.92
0.34	38.51	60.7	-22.19	50.7	-12.19
3.29	25.68	56	-30.32	46	-20.32
5.87	32.81	60	-27.19	50	-17.19
11.05	29.11	60	-30.89	50	-20.89

5.2.4 Test Photographs



CE 001 Front



CE 002 Right



**CE 003 Back**



**CE 004 Left**



### 5.2.5 Test Equipment List

**Table 5.2-1: Conducted Emissions Test Equipment List**

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC059736	Chamber (EMI, Semi-Anechoic)	CIR Enterprises	CH 1	04/03/2022	04/03/2024
WC059439	Meter (Digital Multimeter)	Fluke	85	07/30/2021	07/30/2022
WC059729	Power Supply (AC)	Pacific Power Source	TMX 140	NCR	NCR
WC059822	Receiver	Keysight Technologies	N9038A	10/08/2021	10/08/2022
WC076847	Network (LISN)	Solar Electronics	8012-50-R-25-BNC	11/04/2021	11/04/2022
WC076848	Network (LISN)	Solar Electronics	8012-50-R-25-BNC	12/08/2021	12/08/2022
WC078470	Software	ETS-Lindgren	C47213	NCR	NCR
WC078490	TBD	Extech Instruments	Datalogger 42270	06/14/2021	01/19/2023

**Calibration Abbreviations**

CAL: Calibration

NCR: No Calibration Required

## 6.0 Test Log

### EMI Test Log

Manufacturer:	SLI Compliance	Project Number:	PR154302
Model:	Verity Controller 3006085 Touch Writer Duo 3006070	S/N:	C2115161506 B1903101010 B2013730601
Customer Representative:	Derrick Forester		
Standard Referenced:	VVSG1.0 IEC 61000		

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#### 10m Emissions

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
---		March 18, 2022 0730-0830	Initial Product Setup Time		1.0	Complete	MT
RE		0830-1030	Radiated Emissions, 30 MHz - 1 GHz. FCC Part 15. Class B. (VVSG1.0 IEC 61000) 120 VAC / 60 Hz (4.1.2.9)		2.0	Pass	MT
RE		1030-1200	Radiated Emissions, 1 GHz - 10 GHz. FCC Part 15. Class B. (VVSG1.0 IEC 61000) 120 VAC / 60 Hz (4.1.2.9)		1.5	---	MT
		1200-1230	Lunch		---	---	MT
RE		1230-1300	Continue: Radiated Emissions, 1 GHz - 10 GHz. FCC Part 15. Class B. (VVSG1.0 IEC 61000) 120 VAC / 60 Hz (4.1.2.9)		0.5	Pass	MT
<b>LISN to Ground Plane Bonding = 2.4 and 2.5mOHM</b>							
---		March 21, 2022 0830-0930	Initial Product Setup Time		1.0	Complete	MT
CE		0930-1030	Conducted Emissions, 150 kHz - 30 MHz. FCC Part 15. Class B. (VVSG1.0 IEC 61000) 120 VAC / 60 Hz (4.1.2.9) Verity Controller C2115161506		1.0	Pass	MT
CE		1030-1130	Conducted Emissions, 150 kHz - 30 MHz. FCC Part 15. Class B. (VVSG1.0 IEC 61000) 120 VAC / 60 Hz (4.1.2.9) Touch Writer Duo B1903101010		1.0	Pass	MT
CE		1130-1230	Conducted Emissions, 150 kHz - 30 MHz. FCC Part 15. Class B. (VVSG1.0 IEC 61000) 120 VAC / 60 Hz (4.1.2.9) Touch Writer Duo B2013730601		1.0	Pass	MT



**End of Test Report**